KANSAS-NEBRASKA BIG BLUE RIVER COMPACT REPORT
U.S. Geological Survey—Water Year 2019

The U.S. Geological Survey (USGS) continues to operate two streamflow gaging stations for the Compact Administration—Big Blue River at Barneston, NE (06882000), and Little Blue River at Hollenberg, KS (06884025). An electronic data logger (EDL) at each station automatically records streamflow stage every 15 minutes. Every hour, these instantaneous values are transmitted via satellite to USGS offices, where they are used to compute preliminary values of instantaneous and daily discharge that are immediately posted to the USGS National Water Information System (NWIS) website (addresses shown below). Before the data are finalized, updates and revisions are made as needed, based on a series of quality checks and reviews. Finalized values of daily discharge and daily gage height, along with associated summary statistics are published annually on a site-by-site basis on the NWIS web page (address shown below).

During water year (WY) 2019 (October 1, 2018 to September 30, 2019), periodic visits were made to the stations to maintain and calibrate the sensing and recording equipment, make discharge measurements, and download the data directly from the EDLs, as a backup to the satellite-telemetered data. The discharge measurements were used to determine shifts from the stage-discharge relations (rating curves) that were then used to convert stage values to corresponding values of discharge.

For each of the State delegations and the Compact chairman, copies of the WY 2019 published data (manuscript; discharge daily values; statistics tables; and discharge hydrograph) from the NWIS web page are attached for each station. These water-year summaries (PDF files) are available online within the NWIS site page for each of the streamgages, along with data for other streamgages for the Nation. Also attached are plots of the annual mean discharges for the periods of record, and plots of the daily discharges for WY 2019 compared to those for the median daily statistic for each day of the year.

Current (real-time) and historical data on surface water, groundwater, and water quality for the Nation can be accessed and downloaded via the Water Resources of the United States website (https://www2.usgs.gov/water/) or from the Nebraska Water Science Center website (https://www.usgs.gov/centers/ne-water). All unit values of discharge data and all daily values of discharge can be accessed using the NWIS web, as well as all unit values and daily values of gage height since October 2007.

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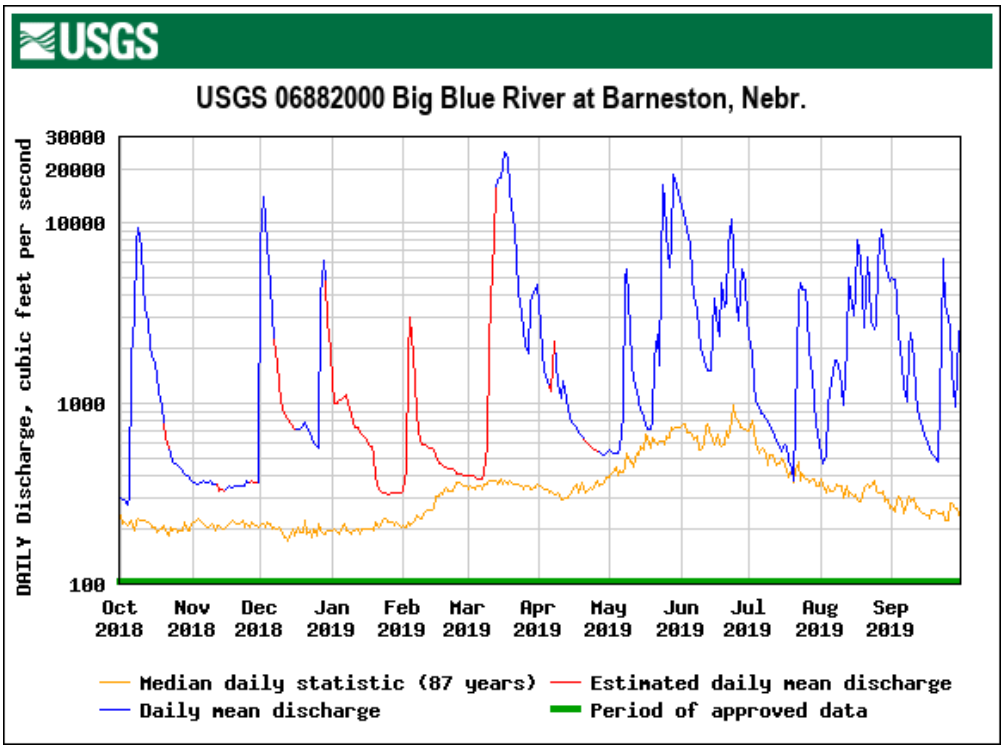
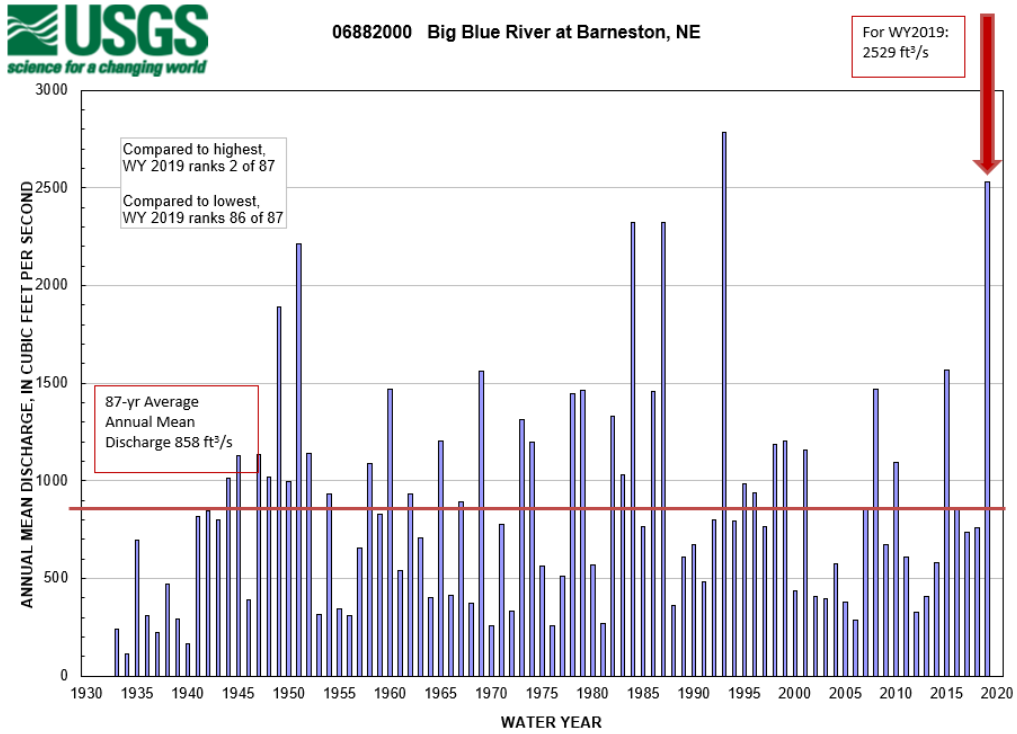
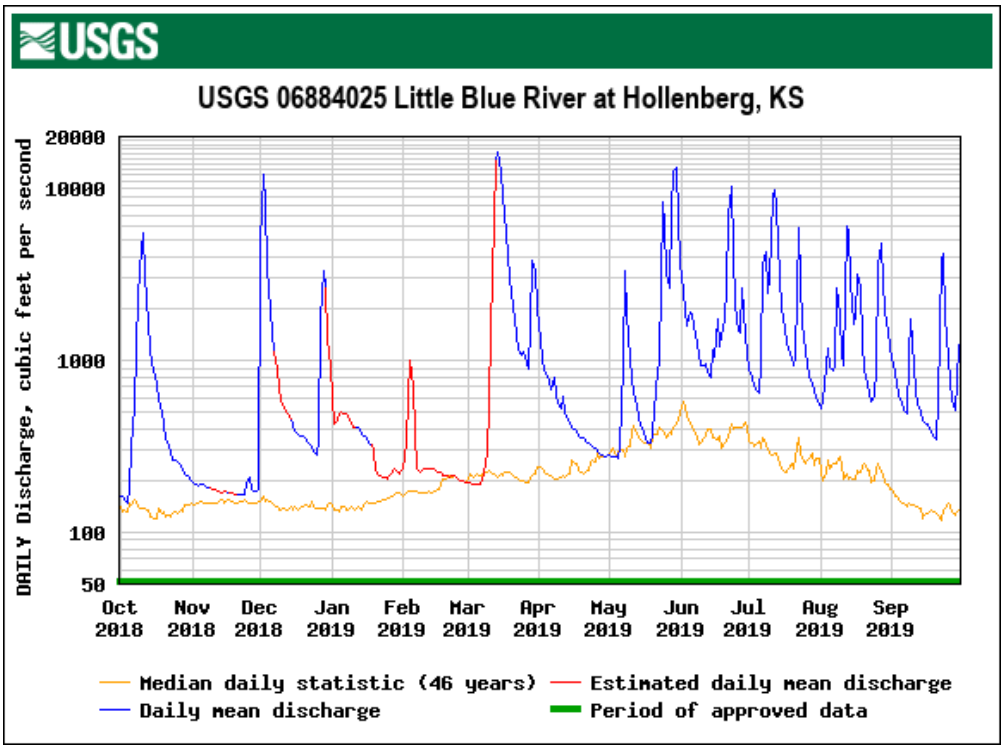
May 13, 2020

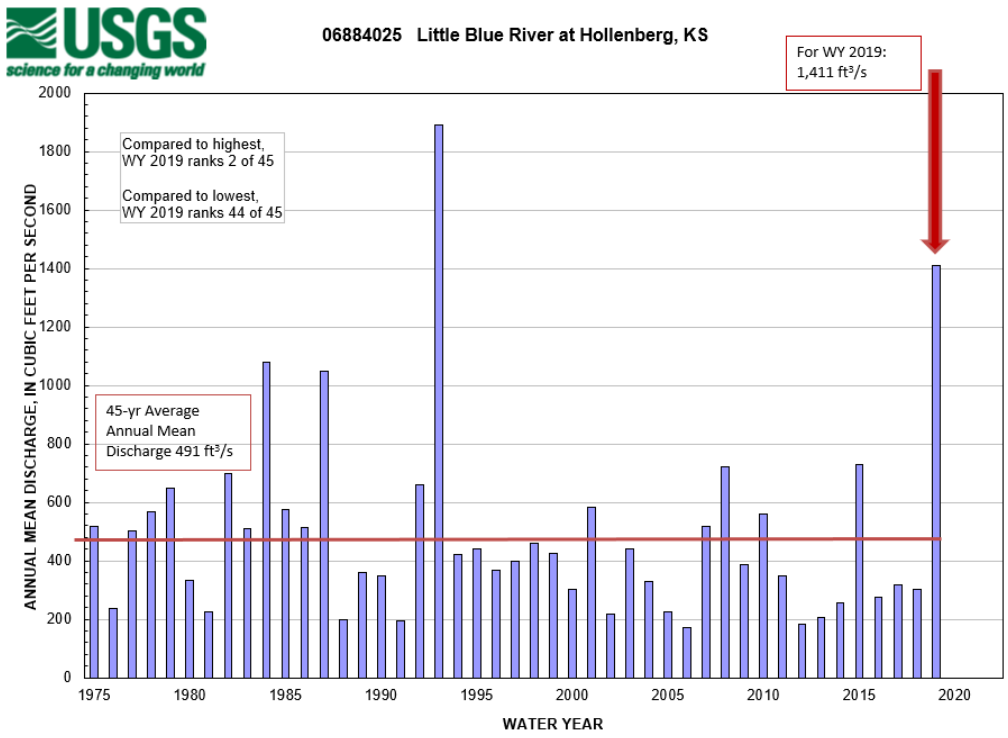
For station **06882000 Big Blue River at Barneston**, 13 discharge (and stage) measurements, ranging from 337 ft^3/s (4.48 ft stage, during period of backwater from ice) to 23,200 ft^3/s (24.23 ft stage), and 3 inspections were made during WY 2019. The annual mean discharge of 2,529 ft^3/s was 3.3 times more than that of the WY 2018 mean of 756 ft^3/s; and 2.9 times higher than the new historical mean of 858 ft^3/s for WYs 1933–2019 (87 years of record). The maximum and minimum daily discharges were 24,800 ft^3/s on March 17, 2019 (peak of record daily was 50,000 ft^3/s on June 9, 1941); and 276 ft^3/s on October 4, 2018.





For station **06884025 Little Blue River at Hollenberg**, 11 discharge (and stage) measurements, ranging from 166 ft^3/s (2.11 ft stage) to 12,600 ft^3/s (12.96 ft stage), and two inspections were made during WY 2019. The annual mean discharge of 1,411 ft^3/s was 4.7 times more than that of the WY 2018 mean of 301.5 ft^3/s; and 2.9 times higher than the new historical mean of 491 ft^3/s for WYs 1975–2019 (45 years of record). The maximum and minimum daily discharges were 16,200 ft^3/s on March 14, 2019 (peak of record daily was 39,300 ft^3/s on July 26, 1992); and 147 ft^3/s on October 4, 2018.





USGS Water-Year Summary 2019

06882000 Big Blue River at Barneston, Nebr.

LOCATION - Lat 40°02'41", long 96°35'14" referenced to North American Datum of 1983, in NE 1/4 NW 1/4 sec.24, T.1 N., R.7 E., Gage County, NE, Hydrologic Unit 10270202, on right bank just downstream of bridge on State Highway 8, 0.6 mi southwest of Barneston, 1.3 mi upstream from Plum Creek, and 4.3 mi upstream from Nebraska-Kansas State line.

DRAINAGE AREA - 4,447 mi² of which 77 mi² probably is noncontributing.

REVISIONS HISTORY - WSP 896: 1932, 1935. WSP 1919: Drainage area.

SURFACE-WATER RECORDS

PERIOD OF RECORD - May 1932 to current year.

GAGE - Water-stage recorder with satellite telemetry. Datum of gage is 1,162.20 ft above sea level. Prior to June 9, 1941, water-stage recorder at site 0.3 mi downstream at datum 1.56 ft higher. June 9 to Nov. 17, 1941, non-recording gage, and Nov. 18, 1941 to Sept. 30, 1979, water-stage recorder at site 0.7 mi upstream at datum 2.0 ft higher.

REMARKS - Accuracy of records for water years prior to 2014 are noted in the individual Annual Data Reports for those water years. For water years 2014 onward, records fair to good except for estimated daily discharges, which are poor, unless otherwise noted.

EXTREMES FOR PERIOD OF RECORD - Maximum peak flow, 57,700 ft³/s, June 9, 1941, gage height, 34.30 ft, at site datum then in use.

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation: U.S. Geological Survey, 2020, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [May 8, 2020], https://nwis.waterdata.usgs.gov/nwis/wys_rpt?dv_ts_ids=&93783&adr_begin_date=2018-10-01&adr_end_date=2019-09-30&site_no=06882000&agency_cd=USGS

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2018-10-01 to 2019-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

Day	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019
1	298	372	7,650	e1,310	e325	e401	2,700	548	13,200	2,330	515	4,950
2	295	363	14,000	e1,010	e435	e400	1,890	539	11,200	1,890	465	4,900
3	291	357	10,400	e997	e1,790	e394	1,520	535	10,200	1,300	501	3,860
4	276	353	7,560	e1,050	e3,020	e387	1,340	529	9,020	1,020	953	2,450
5	304	366	4,580	e1,050	e1,860	e382	1,240	526	7,550	955	1,170	1,650
6	1,820	372	3,070	e1,100	e1,340	e382	e1,160	559	5,170	876	1,480	1,240
7	3,000	364	2,260	e1,120	e867	e384	2,190	856	3,890	885	1,720	1,030
8	7,500	363	e1,660	e1,000	e616	e406	1,670	5,000	3,350	815	1,750	2,030
9	9,470	370	e1,280	e883	e591	e595	1,260	5,520	2,510	797	1,470	2,450
10	7,370	360	e1,030	e786	e590	e2,050	1,080	2,580	2,010	755	1,180	1,720
11	4,680	360	e884	e737	e581	e3,710	1,320	1,650	1,790	700	970	1,150
12	3,370	353	e841	e732	e571	e8,040	1,190	1,350	1,600	656	2,070	921
13	2,780	e326	e816	e694	e568	15,500	927	1,160	1,520	615	5,010	790
14	2,080	e333	e769	e676	e550	17,400	831	1,020	1,520	562	3,980	715
15	1,860	327	e731	e647	e501	17,700	781	919	2,530	545	3,080	656
16	1,670	334	719	e619	e465	20,600	749	832	3,810	592	4,080	602
17	1,400	348	716	e596	e459	24,800	720	755	2,580	581	7,970	560
18	1,170	339	714	e581	e455	22,400	686	719	2,350	485	6,370	527
19	953	340	744	e521	e445	15,300	655	714	4,610	430	4,080	502
20	776	345	779	e393	e436	12,500	629	808	3,390	373	2,620	488
21	e651	345	743	e337	e431	9,240	e614	1,760	3,550	798	6,440	475
22	570	347	686	e323	e432	6,220	e585	2,430	7,550	3,880	4,470	2,280
23	514	348	638	e318	e422	4,150	574	1,620	10,400	4,650	2,840	6,300
24	476	349	600	e316	e410	3,150	564	16,300	7,160	4,250	2,560	3,490
25	461	370	576	e315	e404	2,490	e548	13,300	4,240	4,270	2,740	3,010
26	451	362	566	e315	e403	2,090	541	8,640	2,870	3,120	5,930	2,570
27	433	e370	3,910	e317	e401	1,900	536	5,720	4,060	1,980	9,120	1,480
28	420	e368	6,150	e317	e401	3,520	518	7,790	5,580	1,390	7,970	963
29	410	366	4,800	e317		4,000	523	18,700	4,640	1,020	6,180	1,450
30	398	366	e2,820	e316		4,280	525	16,200	2,920	776	5,100	2,510
31	381		e1,970	e321		4,540		14,700		610	4,780	
Total	56,530	10,640	84,660	20,010	19,770	209,300	30,070	134,300	146,800	43,910	109,600	57,720
Mean	1,823	355	2,731	646	706	6,752	1,002	4,332	4,892	1,416	3,534	1,923
Max	9470	372	14000	1310	3020	24800	2700	18700	13200	4650	9120	6300
Min	276	326	566	315	325	382	518	526	1520	373	465	475
Ac-ft	112,100	21,100	167,900	39,700	39,210	415,200	59,640	266,300	291,100	87,090	217,300	114,500

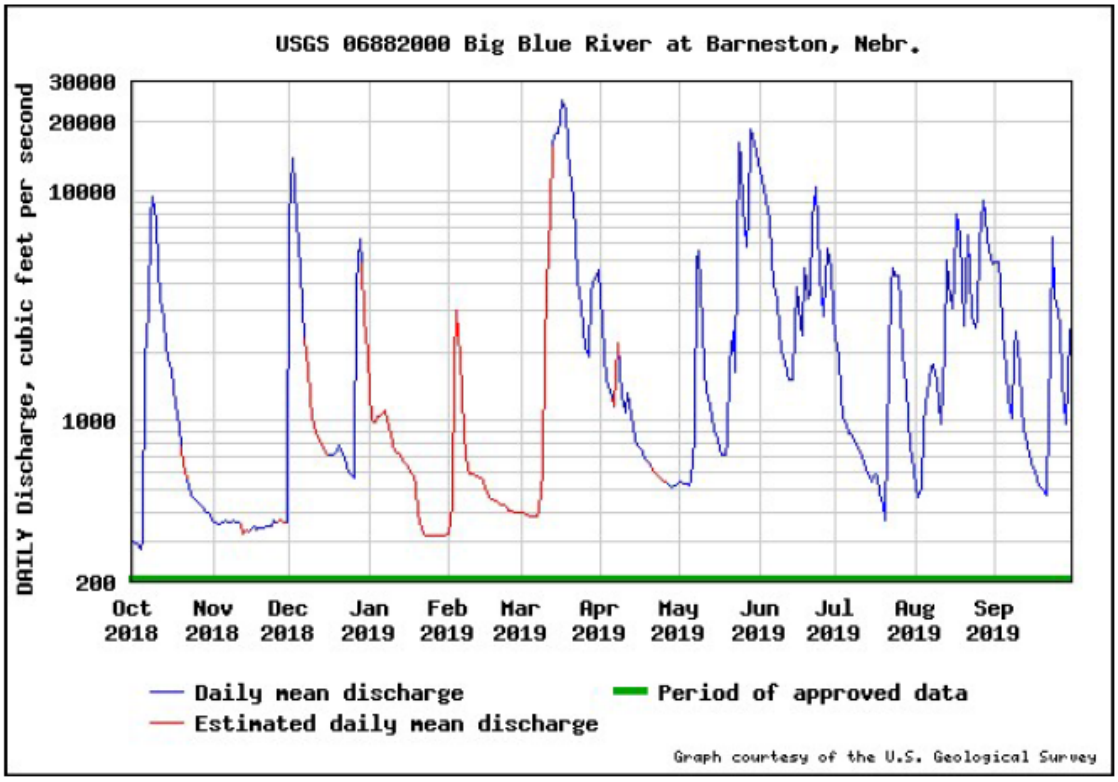
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2019, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	573	307	282	297	591	1,276	813	1,413	2,092	1,231	705	709
Max	7,451	1,526	2,731	1,596	2,876	10,560	5,280	5,207	10,460	12,270	5,227	3,420
(WY)	(1974)	(1999)	(2019)	(1973)	(1984)	(1979)	(1984)	(1995)	(1951)	(1993)	(1954)	(1989)
Min	61.5	77.5	87.4	67.6	116	137	132	96.0	69.3	30.7	21.1	50.6
(WY)	(1941)	(1937)	(1977)	(1937)	(1940)	(1968)	(1934)	(1934)	(1934)	(1934)	(1934)	(1939)

SUMMARY STATISTICS

	Water Year 2019		Water Years 1933 - 2019	
Annual total	923,200			
Annual mean	2,529		858.2	
Highest annual mean			2,781	1993
Lowest annual mean			115.0	1934
Highest daily mean	24,800	Mar 17	50,000	Jun 09, 1941
Lowest daily mean	276.0	Oct 04	1.00	Nov 30, 1945
Annual 7-day minimum	316.1	Jan 24	15.1	Aug 03, 1934
Maximum peak flow			57,700	Jun 09, 1941
Maximum peak stage			34.30[a]	Jun 09, 1941
Annual runoff (cfsm)	0.569		0.193	
Annual runoff (inches)	7.72		2.62	
10 percent exceeds	6,398		1,760	
50 percent exceeds	953.0		283.0	
90 percent exceeds	363.0		109.0	

[a] Gage height at different site and(or) datum



USGS Water-Year Summary 2019

06884025 Little Blue River at Hollenberg, KS

LOCATION - Lat 39°58'49", long 97°00'17" referenced to North American Datum of 1983, in NE 1/4 SW 1/4 sec.8, T.1 S., R.4 E., Washington County, KS, Hydrologic Unit 10270207, on right bank just downstream from bridge on county road, 0.6 mi west of Hollenberg, 1.8 mi downstream from Nebraska-Kansas State line, and at mile 43.1.

DRAINAGE AREA - 2,752 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD - March 1973 to February 1974 (discharge measurements only), March 1974 to current year.

GAGE - Water-stage recorder with satellite telemetry. Datum of gage is 1,216.10 ft above sea level.

REMARKS - Accuracy of records for water years prior to 2014 are noted in the individual Annual Data Reports for those water years. For water years 2014 onward, records good except for estimated daily discharges, which are poor, unless otherwise noted. Discharge measurements made prior to 1974 water year are published in table of miscellaneous sites in WDR NE-73.

EXTREMES OUTSIDE PERIOD OF RECORD - A gage height of 23.07 ft, present datum, from floodmark, discharge not determined, occurred October 12, 1973.

EXTREMES FOR PERIOD OF RECORD -

Maximum peak flow, 59,200 ft³/s, May 7, 2015, gage height, 22.97 ft, site and datum then in use.

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation: U.S. Geological Survey, 2020, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [May 8, 2020], https://nwis.waterdata.usgs.gov/nwis/wys_rpt?dv_ts_ids=&93795&adr_begin_date=2018-10-01&adr_end_date=2019-09-30&site_no=06884025&agency_cd=USGS

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2018-10-01 to 2019-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

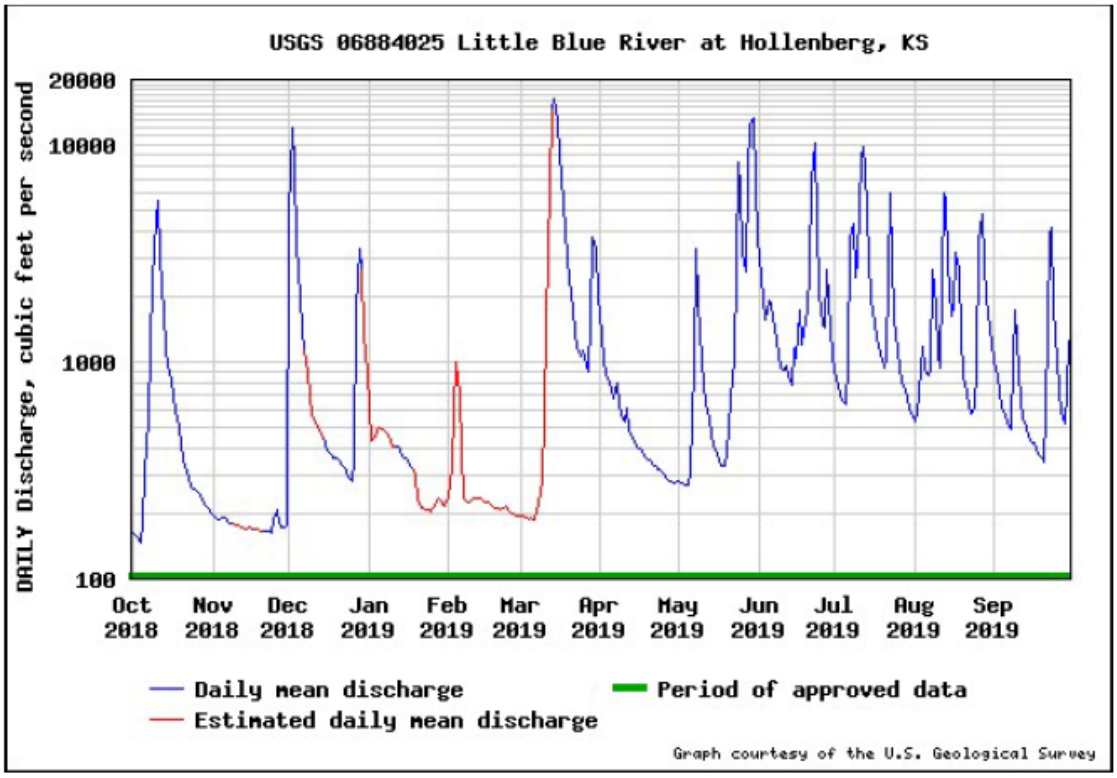
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2018	2018	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019
1	163	198	4,790	e599	e233	e196	1,330	280	3,660	897	528	1,020
2	160	191	12,000	e430	e327	e196	1,020	276	2,520	787	579	850
3	155	189	7,980	e447	e600	e192	878	274	1,940	710	924	724
4	147	186	3,460	e484	e995	e189	807	273	1,580	671	1,170	629
5	183	191	1,970	e499	e711	e190	738	270	1,920	642	916	564
6	307	190	1,410	e486	e380	e189	672	312	1,840	951	868	517
7	538	184	1,130	e484	e234	e202	800	954	1,590	3,660	928	487
8	1,180	181	e891	e468	e224	e219	634	3,340	1,260	4,300	2,650	1,050
9	2,370	180	e693	e436	e226	e288	568	1,880	1,060	2,430	1,820	1,740
10	4,490	e177	e580	e410	e235	e558	530	1,020	936	2,930	1,060	906
11	5,560	e176	e524	404	e236	e1,520	610	776	929	8,870	943	660
12	3,090	e173	e495	404	e233	e6,510	492	648	965	9,770	6,030	554
13	1,670	e172	e484	390	e234	14,400	445	541	845	7,870	5,690	495
14	1,150	e171	453	371	e232	16,200	423	465	790	3,030	2,810	451
15	961	e174	416	361	e227	12,700	410	417	1,150	1,980	1,620	433
16	817	174	392	345	e224	8,980	400	378	1,050	1,510	1,760	426
17	711	168	374	330	e221	7,020	384	343	1,730	1,270	3,180	401
18	592	e169	360	322	e215	4,080	366	333	1,190	1,180	2,650	377
19	498	e169	359	e292	e211	2,960	352	333	1,380	1,030	1,300	358
20	414	167	352	e228	e213	2,440	352	375	1,740	933	869	346
21	351	167	337	e214	e210	1,750	339	509	2,650	1,050	717	574
22	315	166	324	e213	e213	1,380	332	870	6,990	5,960	628	3,870
23	287	165	312	e208	e215	1,160	322	974	10,300	2,920	572	4,150
24	264	164	295	e208	e207	1,070	317	8,340	4,310	1,610	613	1,760
25	261	189	284	e204	e201	1,130	306	6,250	2,100	1,140	916	1,030
26	257	210	346	e213	e198	1,050	297	3,200	1,480	926	3,580	743
27	244	179	1,770	e224	e197	894	286	2,630	1,450	814	4,770	589
28	229	173	3,350	e234	e196	1,580	280	7,350	2,660	731	2,820	518
29	219	172	2,650	e228		3,770	278	12,500	1,410	673	1,970	742
30	213	177	e1,340	e217		3,300	275	13,200	1,060	604	1,440	1,240
31	204		e906	e226		2,000		6,700		555	1,190	
Total	28,000	5,342	51,030	10,580	8,048	98,310	15,240	76,010	64,490	72,400	57,509	28,199
Mean	903	178	1,646	341	287	3,171	508	2,452	2,150	2,336	1,855	940
Max	5560	210	12000	599	995	16200	1330	13200	10300	9770	6030	4150
Min	147	164	284	204	196	189	275	270	790	555	528	346
Ac-ft	55,540	10,600	101,200	20,980	15,960	195,000	30,230	150,800	127,900	143,600	114,100	55,940

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2019, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	329	211	200	180	285	656	451	859	982	801	487	375
Max	2,163	1,113	1,646	577	1,059	3,816	2,379	2,638	4,654	9,014	2,572	1,696
(WY)	(1987)	(1997)	(2019)	(1984)	(1993)	(1993)	(1987)	(2015)	(2015)	(1993)	(1985)	(2018)
Min	45.3	81.1	87.2	74.0	89.1	118	117	103	151	68.1	51.5	32.0
(WY)	(1992)	(1992)	(2013)	(2018)	(2018)	(1981)	(2018)	(2018)	(1981)	(2013)	(2012)	(1991)

SUMMARY STATISTICS

	Water Year 2019		Water Years 1974 - 2019	
Annual total	515,200			
Annual mean	1,411		490.9	
Highest annual mean			1,891	1993
Lowest annual mean			172.9	2006
Highest daily mean	16,200	Mar 14	39,300	Jul 26, 1992
Lowest daily mean	147.0	Oct 04	24.2	Sep 12, 2012
Annual 7-day minimum	166.7	Nov 18	26.0	Sep 06, 2012
Maximum peak flow			59,200	May 07, 2015
Maximum peak stage			23.07	Oct 12, 1973
Annual runoff (cfsm)	0.513		0.177	
Annual runoff (inches)	6.96		2.41	
10 percent exceeds	3,394		816.0	
50 percent exceeds	572.0		190.0	
90 percent exceeds	191.6		96.0	



Water Year 2019 Discharge Measurements

06882000	1470	10/9/2018 10:35	Yes	nds/mja	USGS	8330	14.72	Fair	Clear
06882000	1471	10/22/2018 10:28	Yes	bhi	USGS	586	4.63	Fair	Clear
06882000	1472	11/29/2018 15:05	Yes	LWN	USGS	358	4.12	Fair	Clear
06882000	1473	2/1/2019 10:59	Yes	bhi/kek	USGS	337	4.48	Poor	IceCover
06882000	1474	3/12/2019 12:43	Yes	bhi/jtc	USGS	7720	12.53	Fair	Clear
06882000	1475	3/14/2019 13:43	Yes	MJA/MJ	USGS	18100	21.07	Good	Clear
06882000	1476	3/18/2019 11:16	Yes	gsn/jk	USGS	23200	24.23	Fair	Clear
06882000	1477	3/25/2019 13:55	Yes	bhi	USGS	2440	7.86	Fair	Clear
06882000	1478	4/22/2019 12:35	Yes	KEK	USGS	585	4.72	Fair	Clear
06882000	1479	6/6/2019 11:07	Yes	bhi	USGS	5040	11.25	Fair	Clear
06882000	1480	7/26/2019 9:50	Yes	bhi	USGS	3200	9.00	Fair	Clear
06882000	1481	9/4/2019 13:40	Yes	bhi	USGS	2290	7.62	Fair	Clear
06882000	1482	10/2/2019 12:05	Yes	bhi/jtc	USGS	7430	13.44	Fair	Clear
06884025	587	10/11/2018 11:18	Yes	bhi/jtc	USGS	5650	8.58	Fair	Clear
06884025	588	10/22/2018 12:24	Yes	bhi	USGS	326	2.52	Fair	Clear
06884025	589	11/29/2018 11:42	Yes	LWN	USGS	166	2.11	Fair	IceShore
06884025	590	2/1/2019 13:36	Yes	bhi/kek	USGS	230	3.22	Poor	IceCover
06884025	591	4/4/2019 11:41	Yes	bhi	USGS	815	3.47	Fair	Clear
06884025	592	5/2/2019 12:44	Yes	KEK	USGS	269	2.48	Fair	Clear
06884025	593	6/4/2019 13:02	Yes	bhi/kek	USGS	1510	4.51	Fair	Clear
06884025	594	6/19/2019 10:45	Yes	KEK	USGS	1340	4.05	Fair	DebrisModerate
06884025	595	7/12/2019 12:08	Yes	bhi/kek	USGS	9730	11.51	Fair	Clear
06884025	596	8/23/2019 11:45	Yes	bhi	USGS	567	3.02	Fair	Clear
06884025	597	10/2/2019 13:49	Yes	bhi/jtc	USGS	12600	12.96	Fair	Clear